

ABSTRACT

The present invention relates to a method of forming a device isolation film in a semiconductor device. The present invention comprises the steps of;

5 performing an ion implantation for controlling a threshold voltage on a surface of a semiconductor substrate; forming a trench to define an active region and a device isolation region by performing a photolithography process on the semiconductor substrate; performing an oxidation process for extremely prohibiting ions, which are implanted to control the threshold voltage, from

10 diffusing to the device isolation region and forming a side wall oxidation film at the side wall of the trench; performing an ion implantation on the active region to compensate for ions for controlling the threshold voltage, which are diffused from the active region to the side wall oxidation film by the oxidation process; and forming a device isolation film by burying the oxidation film

15 inside the trench.

Therefore, by lowering a processing temperature of the oxidation process to form the side wall oxidation film to the trench, and performing an ion implantation process for compensating for ions which are diffused to the side wall oxidation film at the oxidation process, ion concentration distribution

20 of a region on which ions for controlling a threshold voltage are implanted can be constant, whereby a performance of a device can be improved.